



# Silver Lake Sediment Removal & Dam Modification Project

April 6, 2022



# Goals

- Dredge Silver Lake to Meet US Army Corp of Engineers Requirements
- Increase Recreational and Environmental Opportunities along the Silver Lake Corridor
- Increase Trail Connectivity Around Silver Lake
- Provide pedestrian Safety Improvements – Crossing Broadway Bridge and at grade crossing points for the Trail System
- Reduce long term maintenance and safety concerns with current Dam





# Bonding Request

- Bridge \$2.19 million
- Sediment \$5.18 million
- Dam Removal \$4.07 million
- Trail (full) \$1.9 million
- Future Park Improvements: \$10 million
- Total Project: \$23.34 Million  
(state bonding request \$11.67M)
- Council Approved Bonding Request





# Proposed Pedestrian Bridge

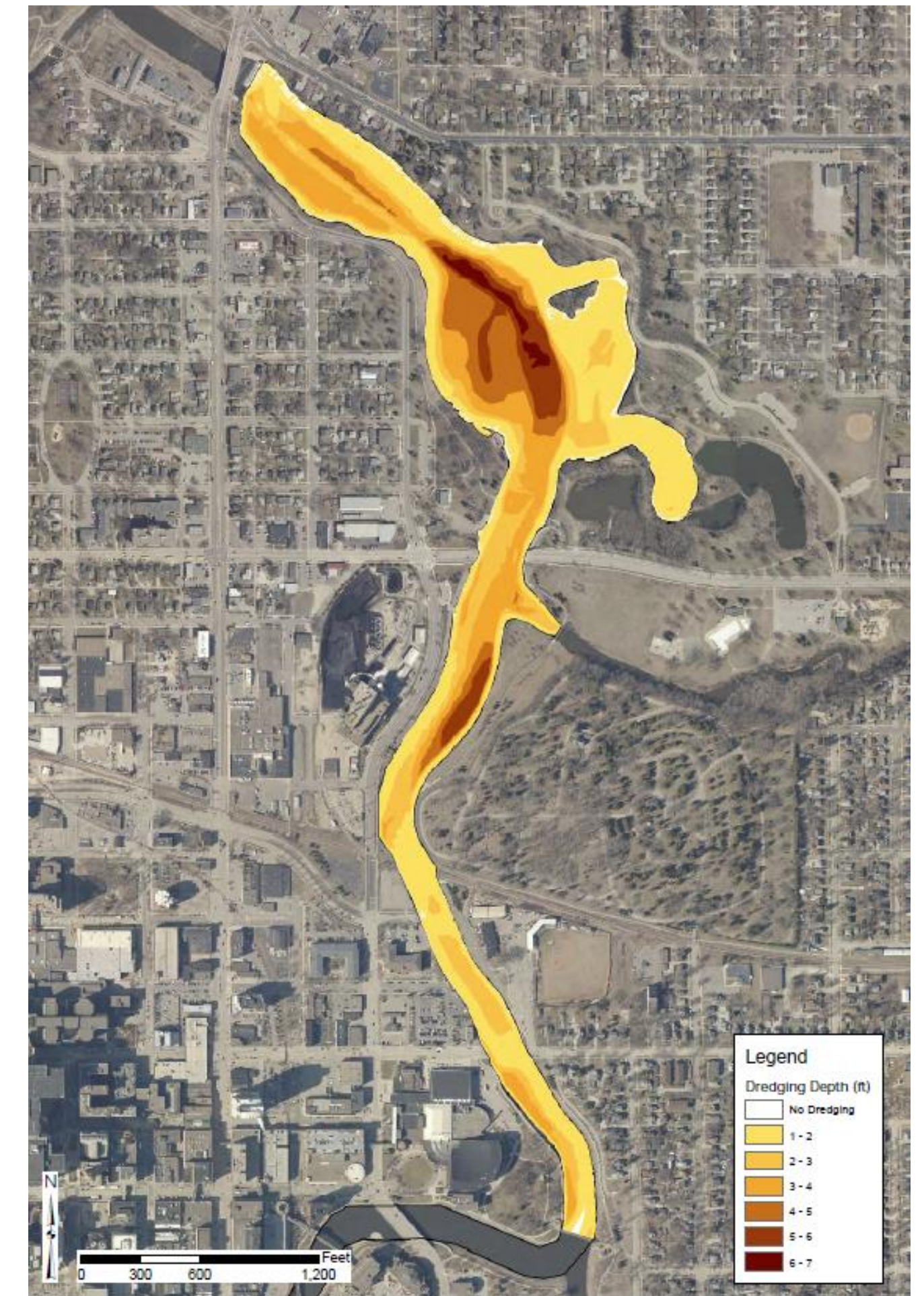
- Current Broadway Bridge pedestrian walkway is not adequate
- Broadway Bridge was built pre-1940 and improved in 1977
- Ideal bridge location is near where existing dam is located
- Public input preferred steel plate girder bridge





# Sediment Removal

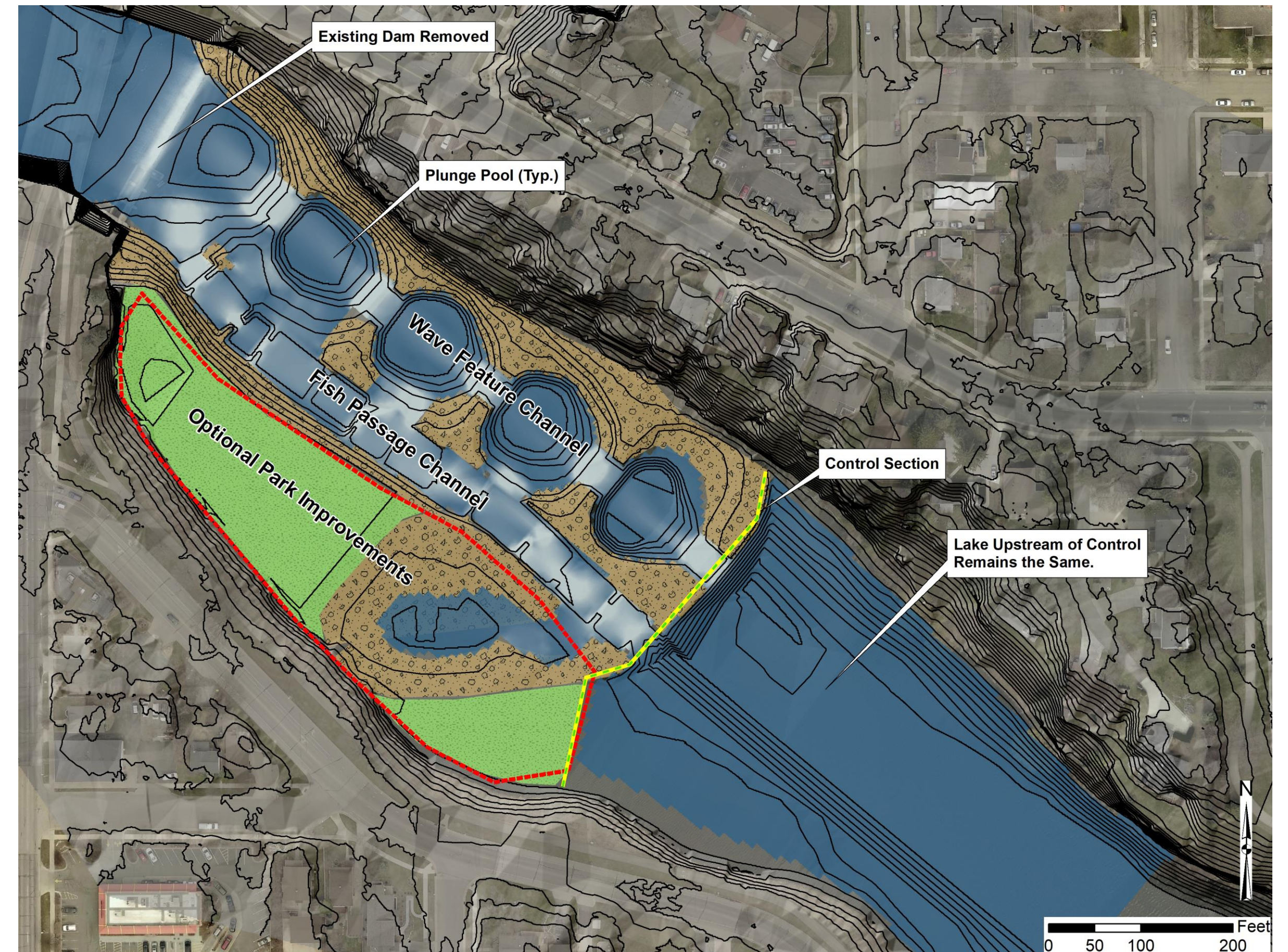
- Dredging of Silver Lake is required by US Army Corps of Engineers as part of flood control maintenance.
- Approximately 200,000 Cubic Yards of material needs to be removed and placed in a containment cell at the KR-3 Reservoir Site.
- Project scheduled for 2023 and will require the lowering of Silver Lake for removal of material.
- Sediment removal will improve recreational and wildlife use of the lake.





# Proposed Dam Modification

- Lake level will remain same.
- Removes safety hazard of dam.
- Dam originally built in 1937.
- Dam has an environmental impact.
- Creates new recreational uses.
- Creates a destination attraction.
- No downstream or upstream impacts by modification.





# Silver Lake Revitalization and Restoration



Existing - Normal Summer Flow



Proposed - Normal Summer Flow





# Silver Lake Revitalization and Restoration



Existing - Normal Summer Flow

Proposed - Normal Summer Flow









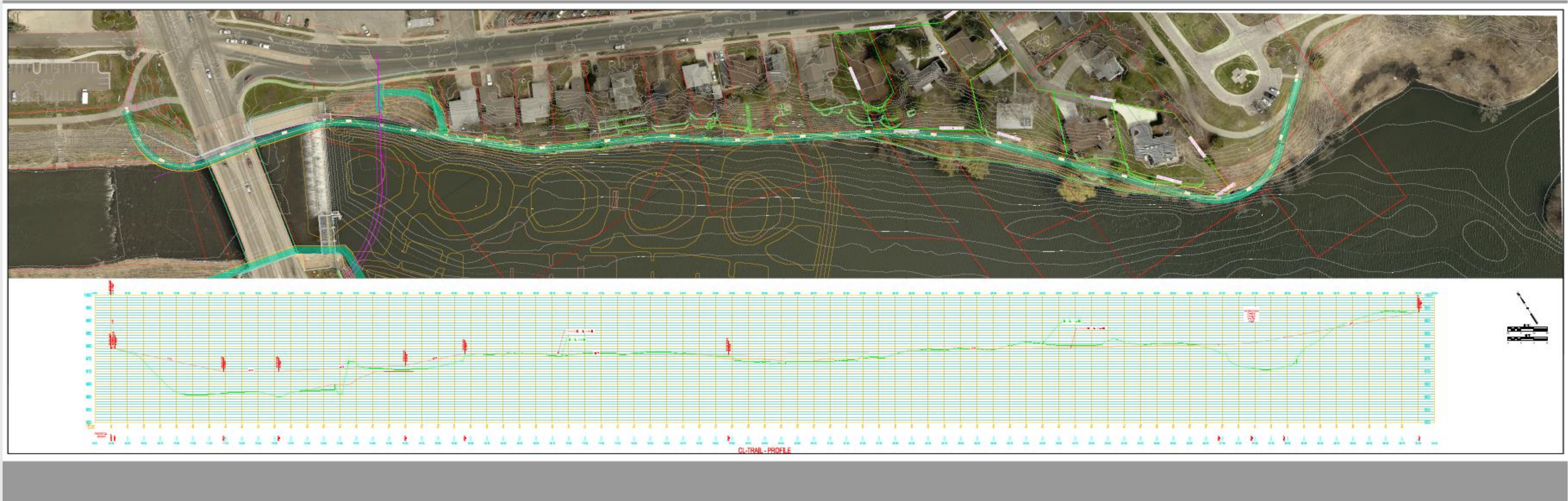
# North Trail Extension

- North side trail is in the 2016 Park System Plan and Bike/Pedestrian Master Plan.
- City owns property above the current Silver Lake water elevation.
- Trail provides: Recreation, transportation needs, addresses safety concerns, and health benefits with trail use.



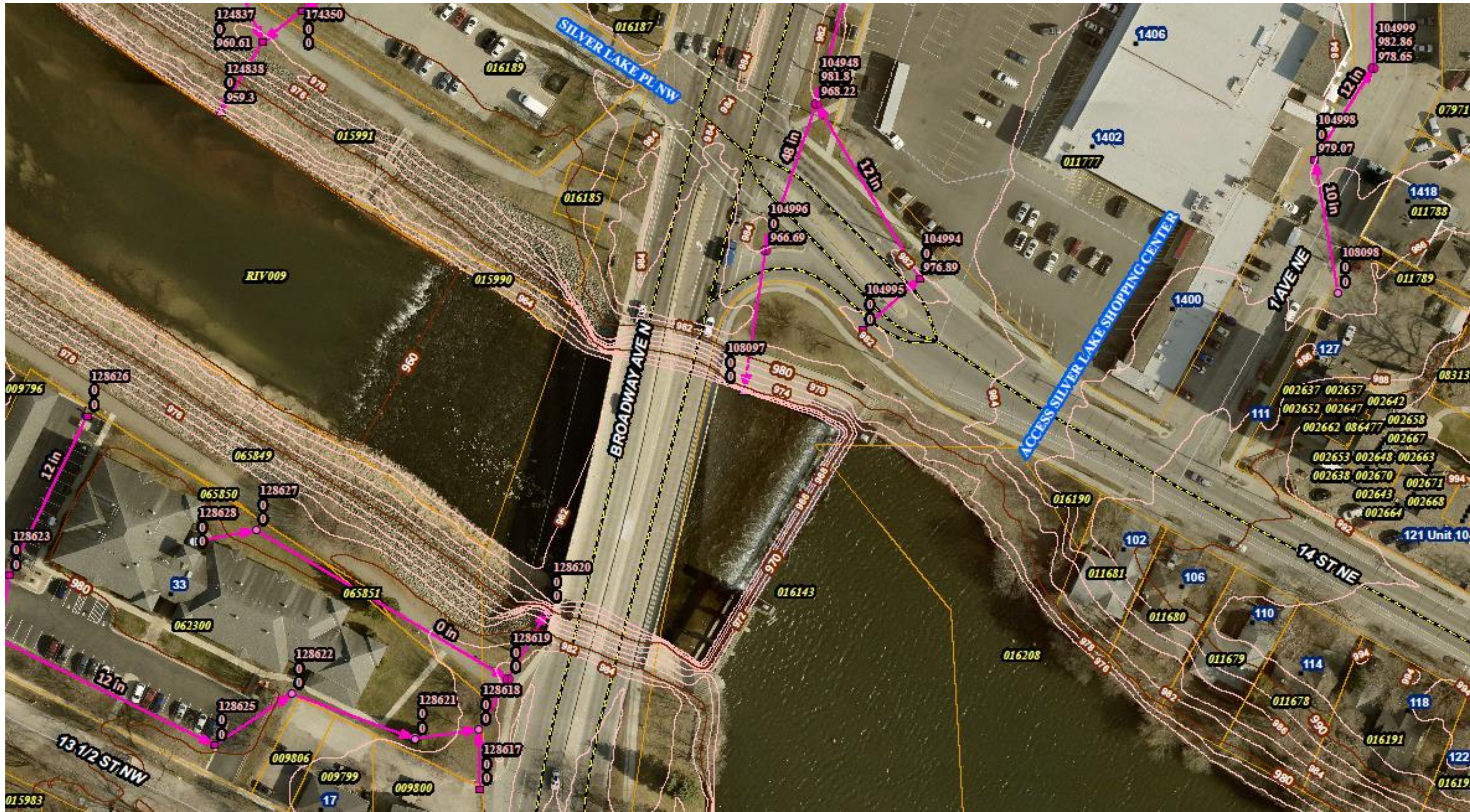


# North Trail Concept Plan





# Broadway Crossing Alternatives





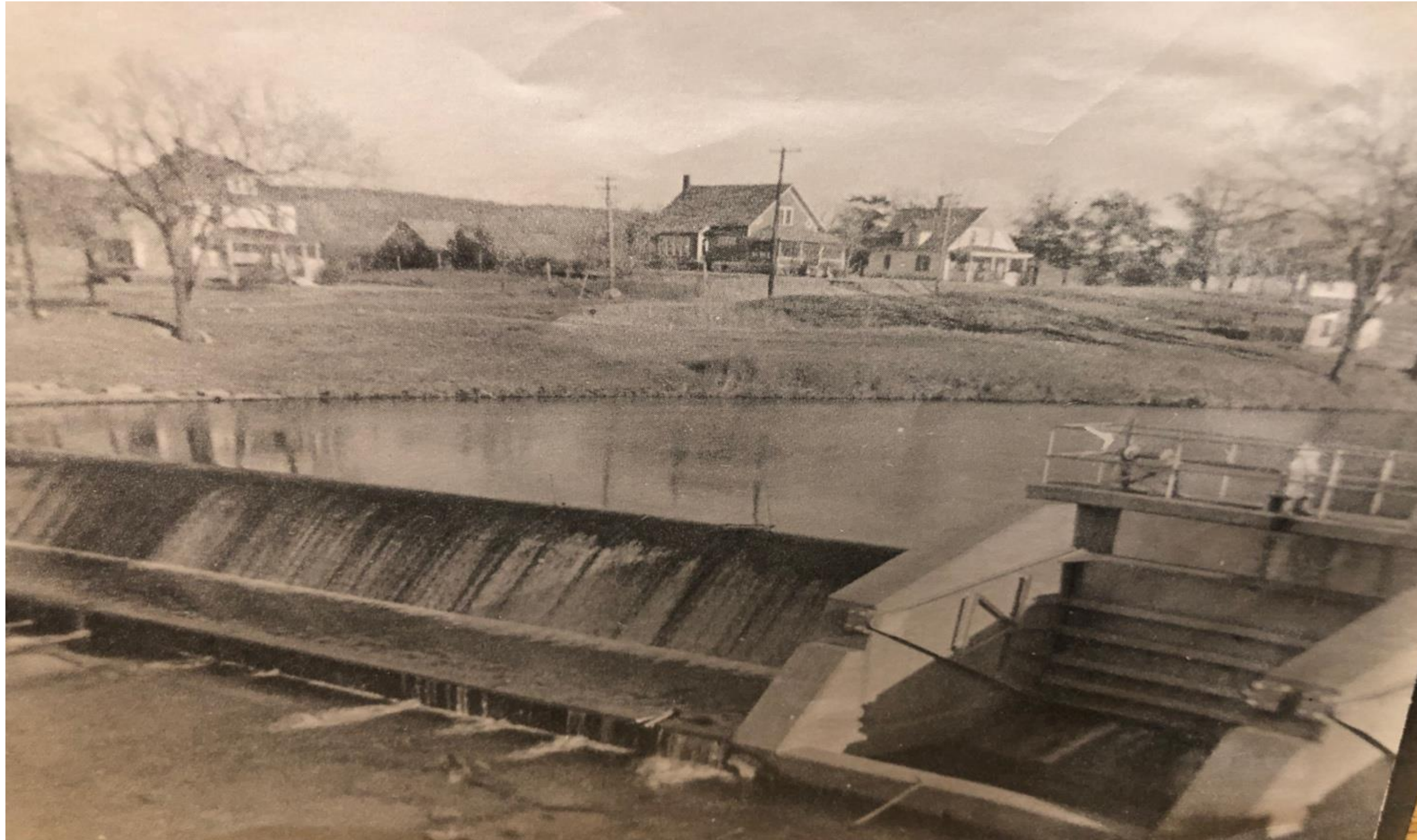
# Dam History

- 1932- Excavation of Lake Started
- 1936- Last Pour of Original Dam
- 1951- Damage to Dam in summer flood and Jurisdiction Pass to City Electric Department
- 1955- Flood Damages Repaired
- 1981 and 1982- Significant Repairs to made to Dam
- 1991- Army Corp of Engineers Make Repairs/Improvements to Dam
- 2015- RPU Makes Concrete repairs and Tainter Gate rehabilitation



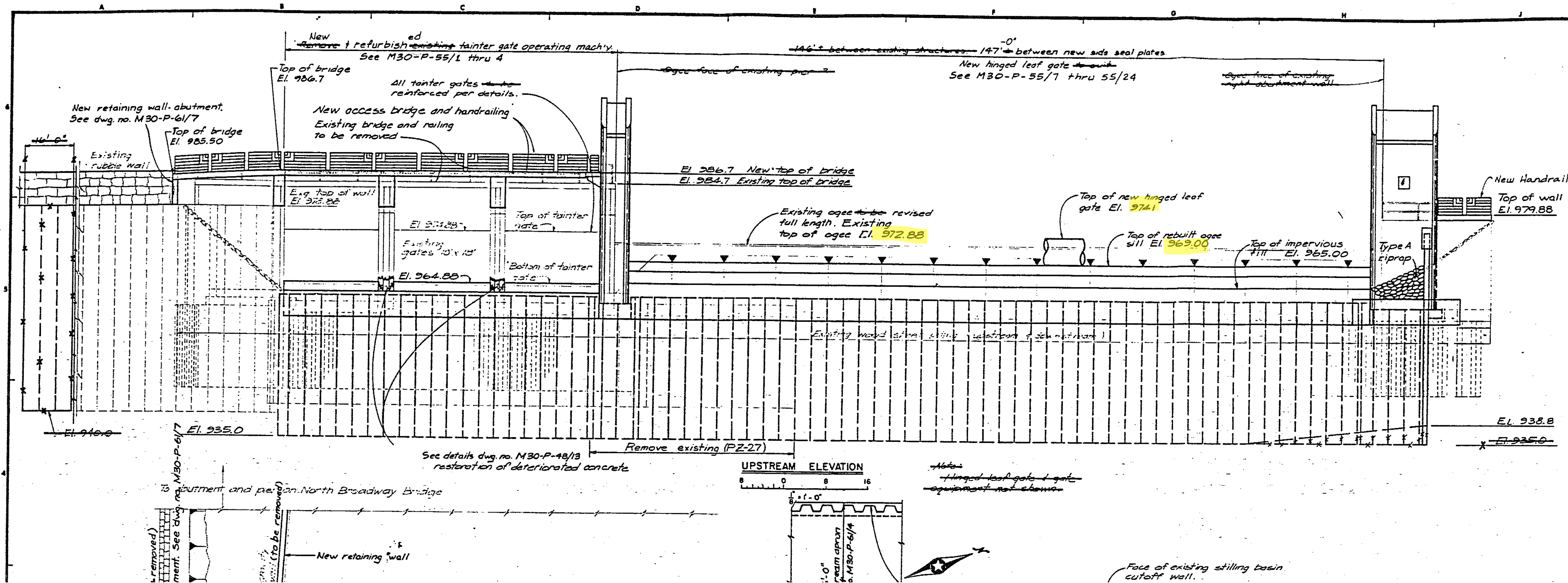


# Dam History





# Dam History





# Dam History





# Dam and River Flow





# Dam and River Flow





# Dam Maintenance

- Dam Continues to Require Significant Repairs, early 80's, 90's Corps Improvement, 2015 Improvements
- RPU 20 year CIP Maintenance Estimate is \$1,240,000 plus RPU staff time to operate/inspect/maintain the mechanical dam
- 400 Dam Failures from 1985-1994 (NRCS 2000)
- Significant Hazard Dams reduced from 11,882 in 2017 to 11,343 dams in 2019 (USACOE)





# River Flow

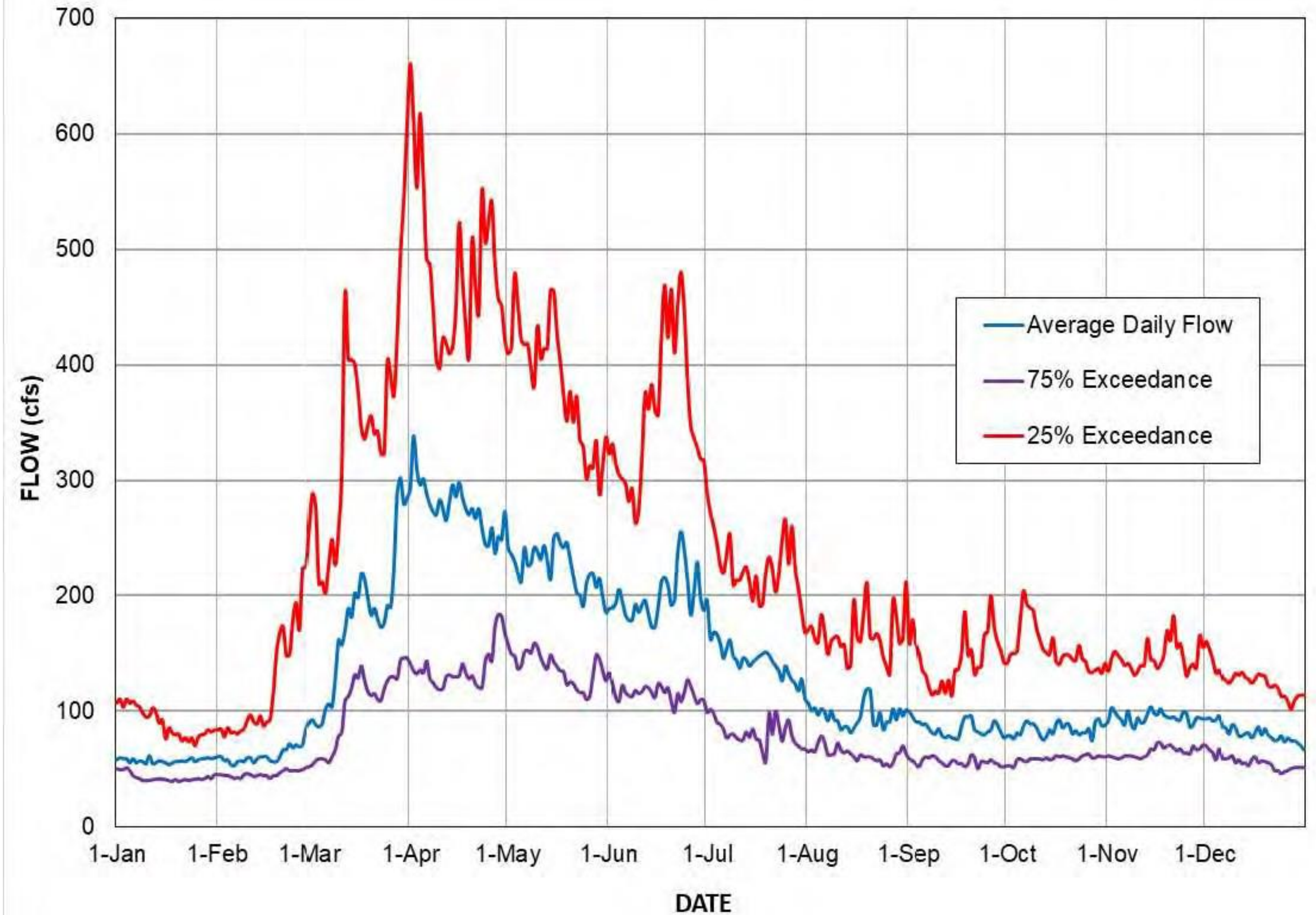
Annual Mean Flow Rate 132 cfs

Minimum Fish passage 20 cfs

Minimum Floater Passage 75 cfs

Minimum Wave Function 100 cfs

Maximum Wave Function 400-500 cfs





# River Flow

- Canoe and Tubing Rentals on Zumbro River
- Existing Boat Rentals on Silver Lake
- Flow Data Shows Floating Activities Available 75% of the Summer Months
- Dam Modification will all the increased use of floating recreation on Silver Lake
- Increase use of Lake will bring additional awareness to Water Quality



Rochester Public Works  
Jul 9, 2019 10:41:00 AM





# DNR-Reconnecting Rivers

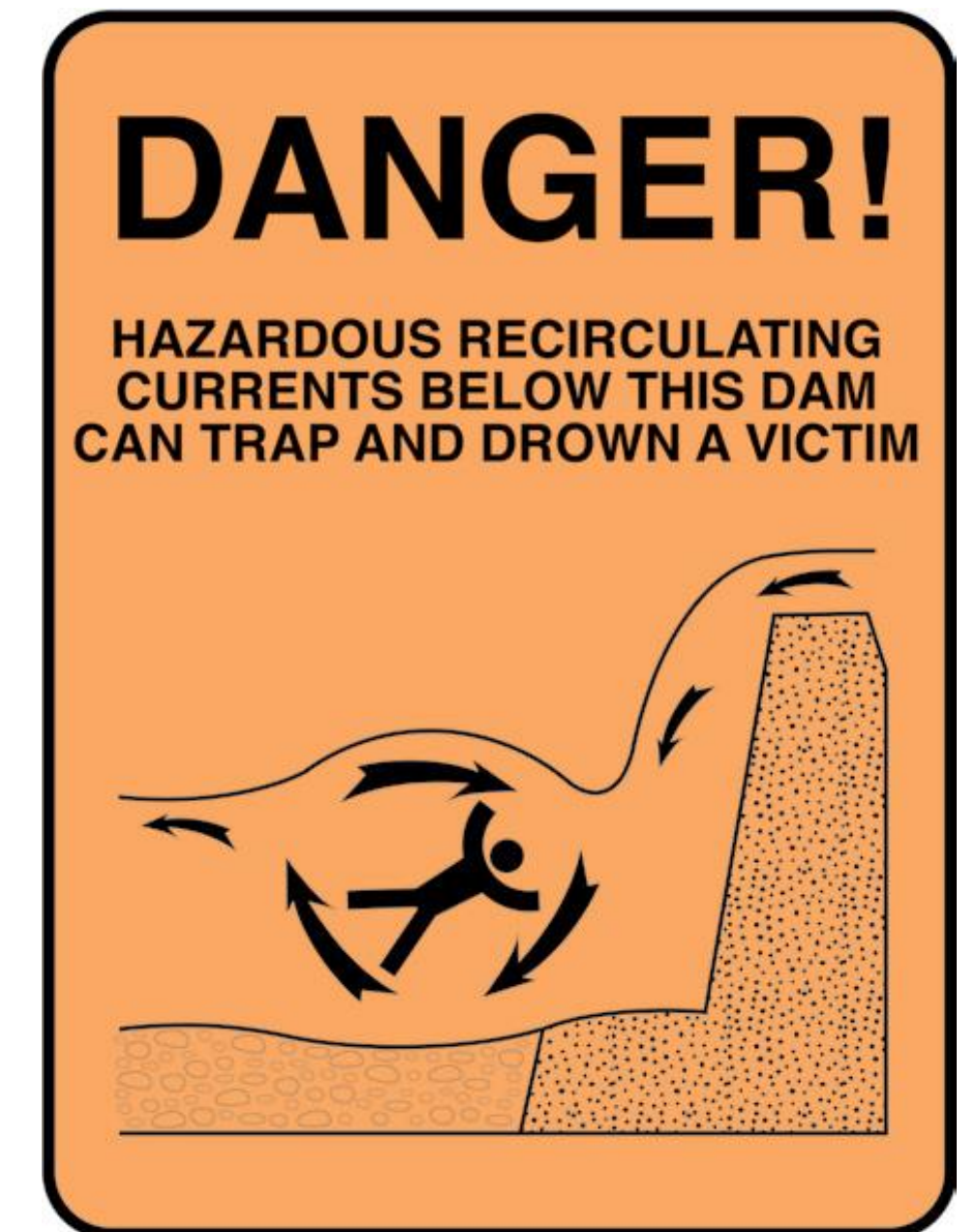
- Reconnecting Rivers: Natural Channel Design in Dam Removals and Fish Passage
- [https://www.dnr.state.mn.us/eco/streamhab/reconnecting\\_rivers.html](https://www.dnr.state.mn.us/eco/streamhab/reconnecting_rivers.html)
- The DNR Lists the Silver Lake Dam Modification project as No. 23 on their Dam Safety Project Priority List.
- <https://www.lrl.mn.gov/docs/2021/mandated/211036.pdf>





# Dam Safety

- Low Head Dams Create Recirculating Currents
- Mixing of Air Bubbles in the Water Creates a Decrease in Buoyancy by One-Third
- Branches and Debris trapped in Recirculating Currents pose additional Hazards
- Dam Abutments can be too Steep and Challenging to Climb
- [https://files.dnr.state.mn.us/education\\_safety/safety/boatwater/drowningmachine.pdf](https://files.dnr.state.mn.us/education_safety/safety/boatwater/drowningmachine.pdf)





# New River Shoreland

- Additional Shoreland Created along South Side
- Can be incorporated in Silver Lake Park Master Plan
- No Wetlands Currently Planned for Land, may need to move Vegetation Buffer
- Some of the area could be used for Trails





# Maintenance

- Mechanical Dam Requires Special Maintenance and Inspections
- Proposed Grade Control Structure will not have any mechanical systems
- Trees get caught on current Dam and on other structures
- During Flood Events most of the grade control structure is fully submerged
- Maintenance and Inspection of grade control structure will be part of Flood Control and not part of Parks





- March 2019 Open House in Post Bulletin
- EAW Discussion in Post Bulletin
- Study Session Information in Post Bulletin
- Public Service Announcements Sent out for Open House
- Social Media Notices
- Post Cards Mailed to Residents around Silver Lake
- POLCO Surveys

WEATHER

WEDNESDAY, SEP. 10, 2003

PORT BULLETIN, ROCHESTER, MINN.

>>>

StormTRACKER

Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday
7/9 Ch. 5, 9 Partly Cloudy	3/8 Rd Show Mostly Sunny	2/14 Partly Cloudy	2/16 Mostly Cloudy	4/16 Partly Cloudy	5/17 Partly Cloudy	11/0 Mostly Sunny
Average and spans to 10 days						

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# Community Outreach

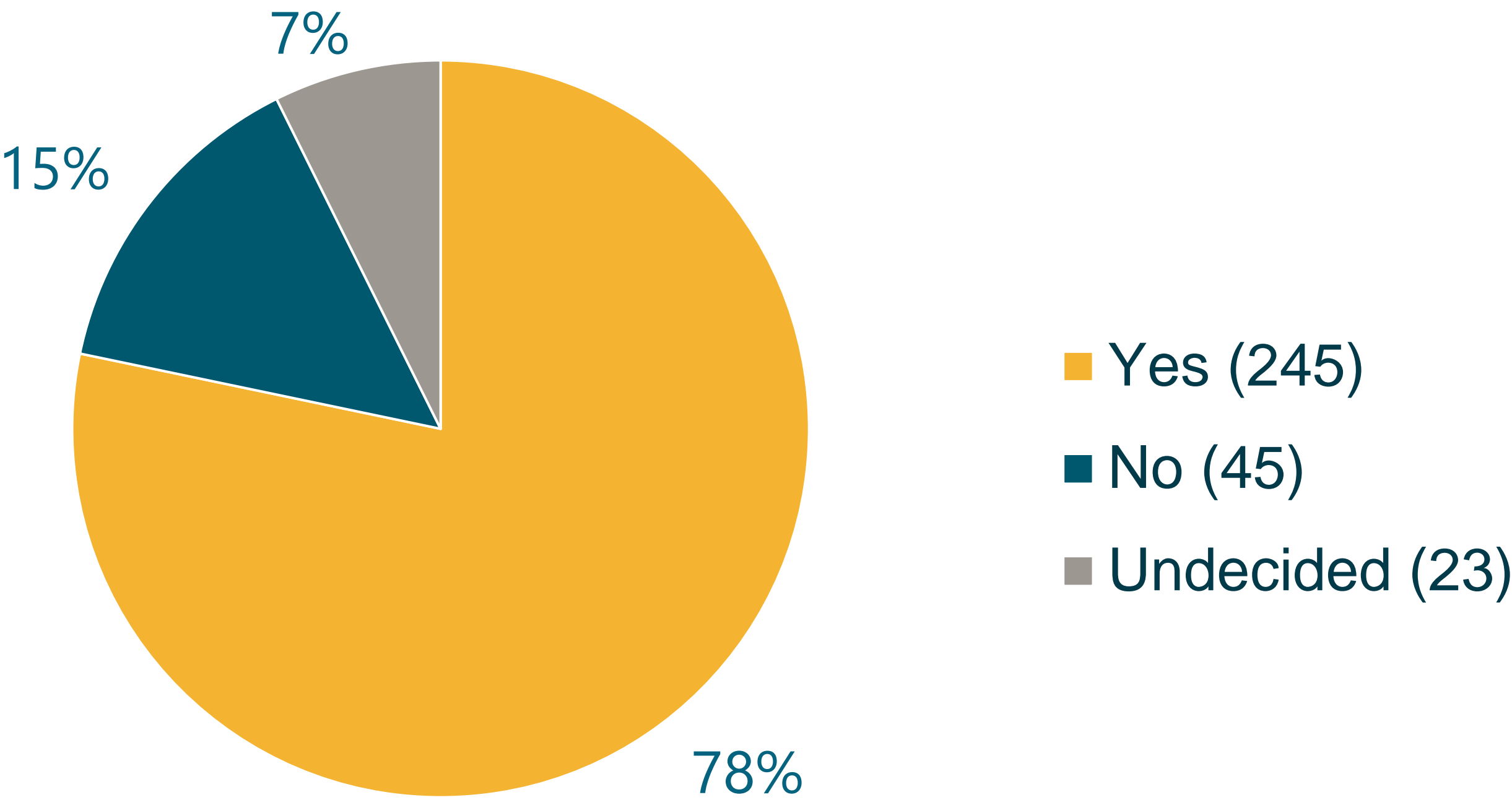
- March 2019 Open House, 80 people signed in, 248 POLCO responses
- October-November 2020 Virtual Open House, 4,500 (to date) Views and 300 POLCO responses
- November 30, 2020- Project Presented to Council at a Study Session
- February-March 2021 –EAW released for Comments
- Presentations to Rotary Club and Lowertown Neighborhood Association





# Survey Results

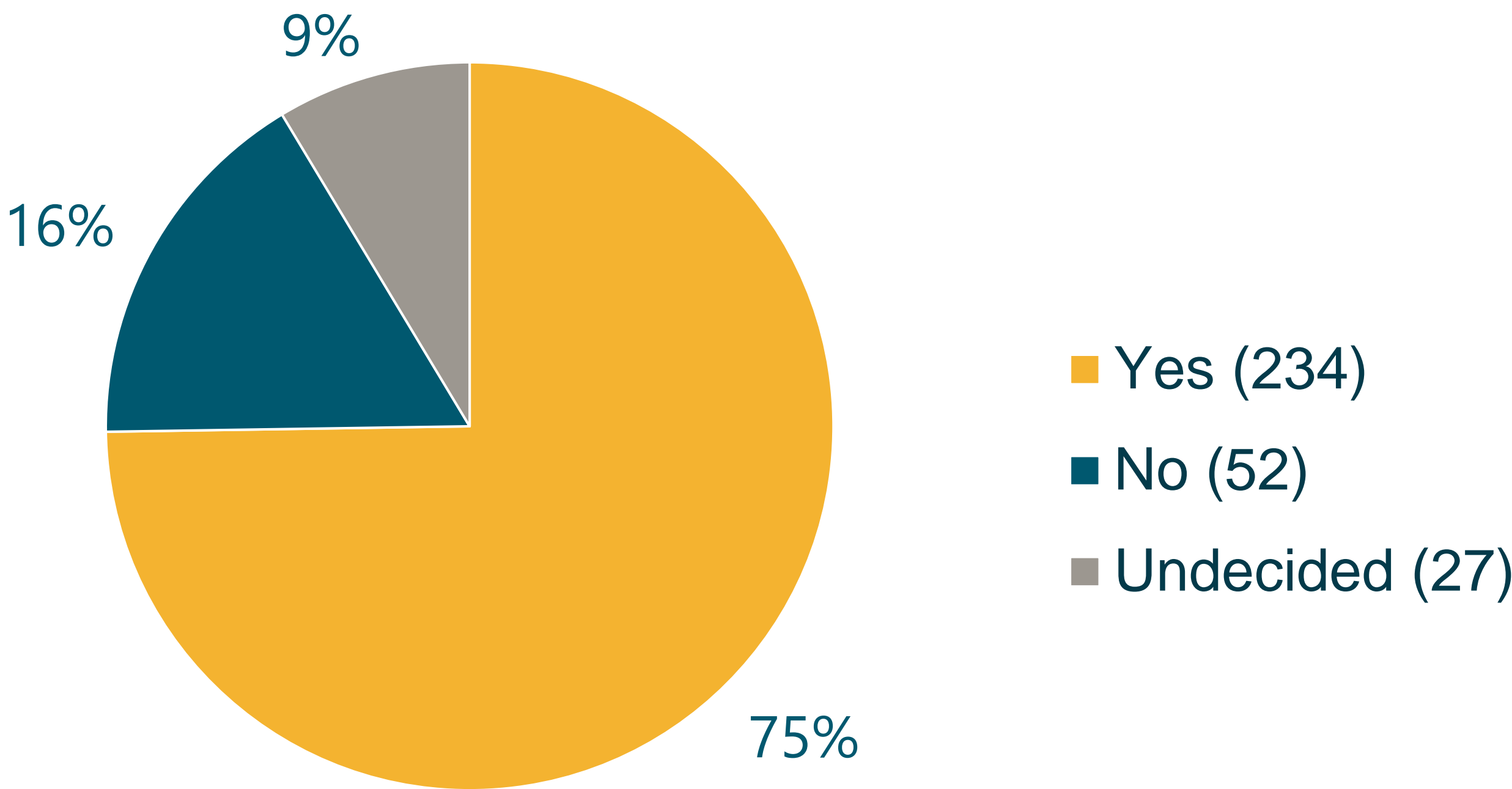
Do you support the proposed pedestrian bridge across Silver Lake?





# Survey Results

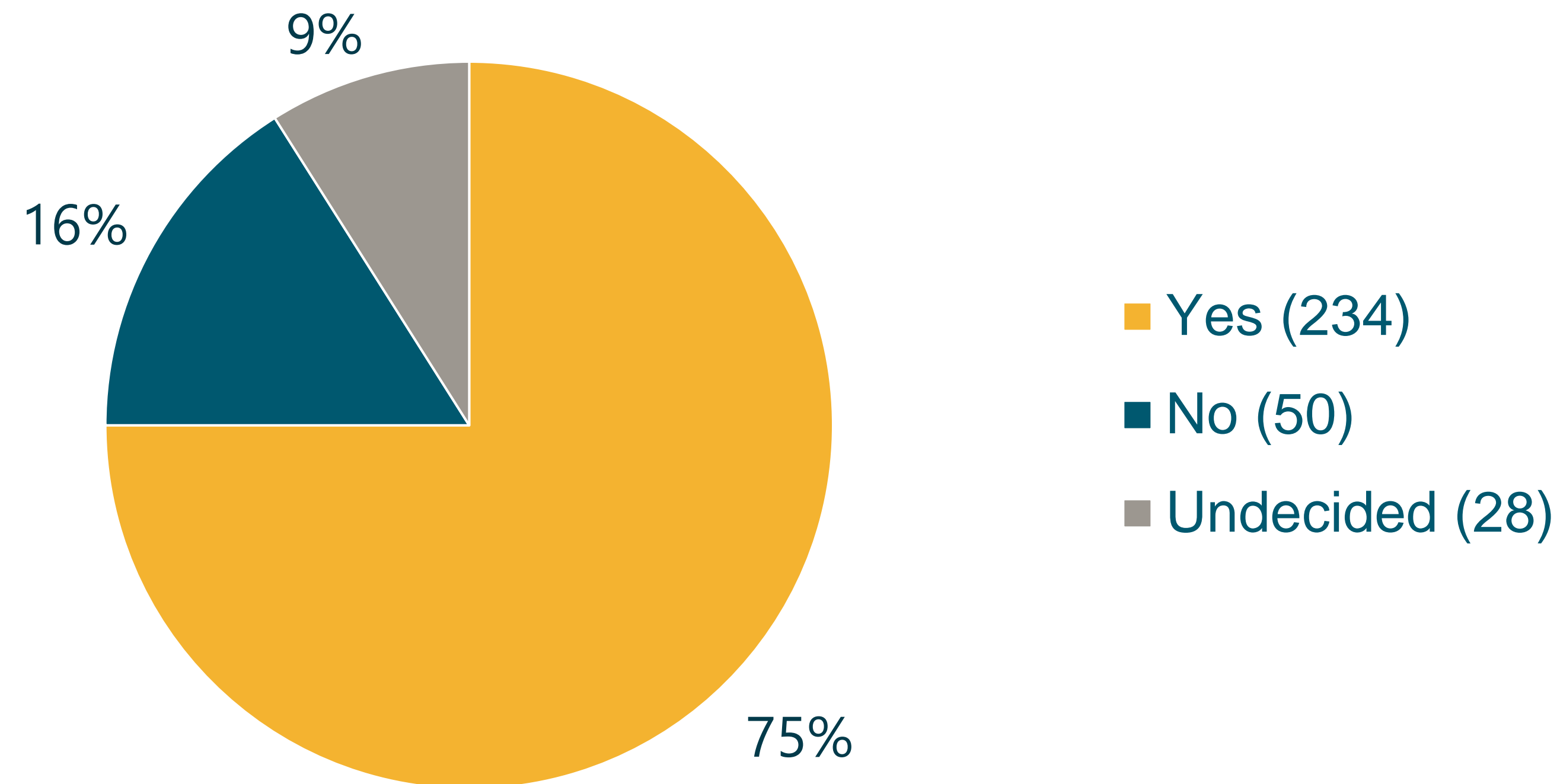
Do you support the proposed modification of the Silver Lake Dam?





# Survey Results

Do you support the installation of the pedestrian trail on the north shore of Silver Lake while the lake levels are lowered for other projects?





# Alternatives

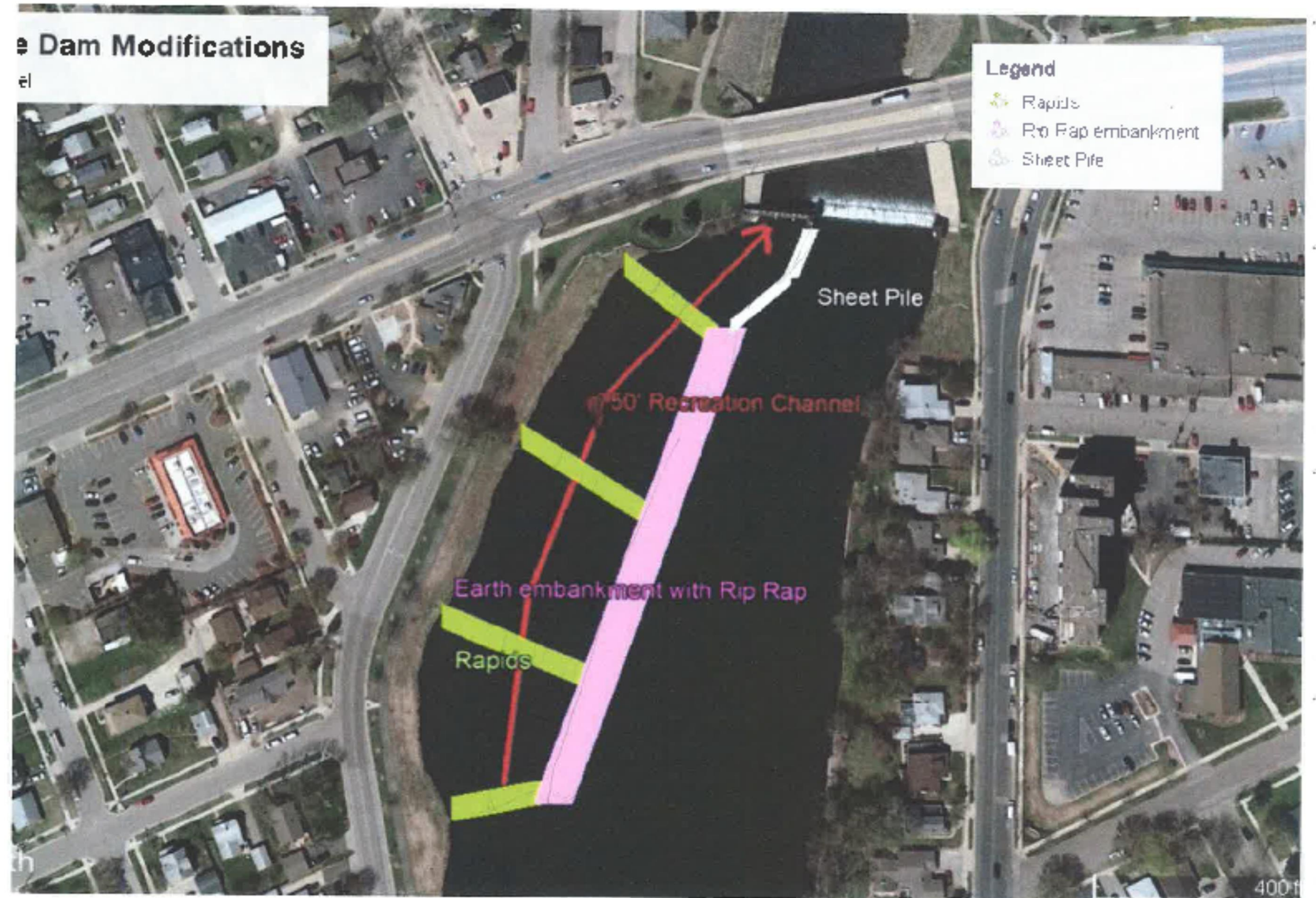
- First Alternative: Do Nothing. Leave existing Dam in Place with no trail extension underneath Broadway or new pedestrian bridge
- Second Alternative: Remove Dam and recreate the original river section and remove the lake (DNR's preferred option)
- Third Alternative: Dam Modification with Trail Options under Broadway and new Pedestrian Bridge (Staff Preferred Option and Council Approved Option)





# Alternatives

- Friends of Silver Lake Alternative
- Leaves Lake along homes
- Requires new dam control and 700 ft of constructed wall between lake section and fish passage section





# Questions?

## Silver Lake Revitalization and Restoration



Existing - Normal Summer Flow

Proposed - Normal Summer Flow



# Contacts:

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